

INCREASE IN LOCAL ABUNDANCE AND EXPANSION OF GEOGRAPHICAL RANGE IN THE LEAST CARPET *IDAEA RUSTICATA* (D. & S.) (= *VULPINARIA* (H.-S.)) (LEP.: GEOMETRIDAE) AS INDICATED BY ROTHAMSTED INSECT SURVEY LIGHT-TRAPS

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Introduction

THE LEAST CARPET MOTH *Idaea rusticata* was considered by 19th-century Lepidoptera collectors to be a great rarity and was then known to breed in only a few localities in Kent. Since that time, its stronghold has expanded into several counties in south-east England where, in places, it is now fairly common. Investigation of records on the Rothamsted Insect Survey (RIS) database reveals the species to be increasing in abundance at those sites where it has been recorded for many years. The records also show that its geographical range is considerably larger than previously thought. For ease of reading, details of those RIS trapping sites mentioned in the text are given in tabular form.

Brief history of the status in Great Britain

During the latter part of the 19th- and early 20th-centuries *I. rusticata* was understood to be restricted as a resident species to Kent (Newman, 1869). There were occasional records, often of single individuals, from Sussex, Dorset, Devon and Suffolk (South, 1939). Skinner (1998) states that it is moderately common in north Kent, East Sussex, the London area, Surrey and South Essex. He also confirms the early records from Dorset (Isle of Portland) and cites an unconfirmed record from The Hebrides (St. Kilda). He states that there are occasional widespread records from the south coast of England and that, since 1991, the species seems to have become established on the Isle of Wight and again at Portland.

Recent local increases in abundance and possible range expansion

The RIS operates approximately 90 light-traps of standard design throughout the British Isles. Samples are collected daily and the resulting database holds 1,591 records of *rusticata* from 39 sites in 16 counties (including the Channel Islands of Jersey and Guernsey) for the period 1968 to 1996. Two of these sites, Sheppey and Guernsey, catch the species regularly and have long time-series data-sets which coincide for the period 1981 to 1996. Over this period, *rusticata* has become more abundant at both of these sites – particularly at Sheppey (Fig. 1). These increases are linear on a logarithmic scale and represent a 3.3-fold increase per 10 years at Guernsey and a 15-fold increase at Sheppey.

The difference between the small increase at Guernsey and the relatively large increase at Sheppey suggests a general expansion of range during which the species thrives at new localities in the absence of its usual predators or diseases. In the case

of *I. rusticata*, this possibility is supported by the recent capture at several long-running RIS light-trap sites from where the species had not previously been recorded (Table 1).

Site name	Year trap started	First capture of <i>I. rusticata</i>	Total caught
Ewingswode	1974	1996	2
Hamstreet	1988	1995	1
Lydd	1986	1995	1
Rothamsted (Barnfield)	1933	1996	5
Sheppey	1977	1981	687
Warehorne	1988	1993	1
Winchester	1978	1994	2
Yarner Wood	1974	1996	1

Table 1. Long-running RIS sites with year trapping started, year of first *Idaea rusticata* record and total *I. rusticata* caught to 1996.

Idaea rusticata has now been recorded in RIS light-traps in 14 mainland counties plus the Channel Islands of Jersey and Guernsey between 1968 and 1996 (Table 2). The number of sites where it has been recorded in each county is given, along with the number of individuals caught. This list represents a significant increase in our knowledge of the distribution of the species in Britain.

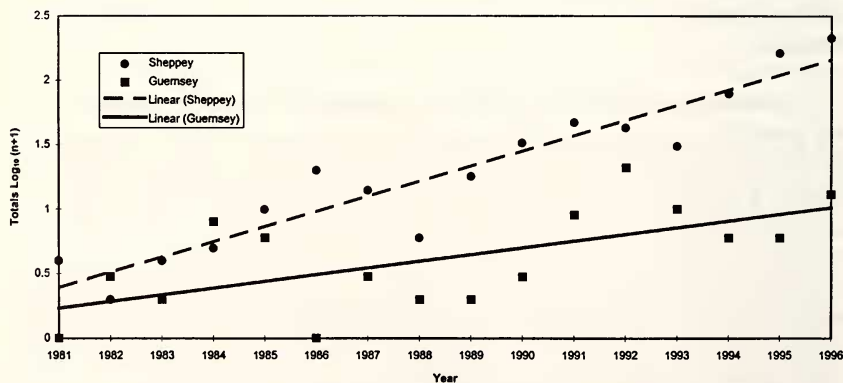


Figure 1. Annual totals of *Idaea rusticata* at Sheppey and Guernsey, 1981-1996. Regression equations (a) for Sheppey: $\log(\text{catch} + 1) = 0.12 \text{ year} + 0.28$ ($R^2 = 0.89$) and (b) for Guernsey: $\log(\text{catch} + 1) = 0.05 \text{ year} + 0.18$ ($R^2 = 0.40$).

County	No. of sites	No. of individuals
Kent	10	756
Essex	7	582
Hertfordshire	4	18
Guernsey	2	94
Jersey	2	43
Surrey	2	40
Middlesex	2	37
Hampshire	2	6
Leicestershire	1	5
Huntingdonshire	1	2
Bedfordshire	1	3
Berkshire	1	2
E. Sussex	1	1
Devon	1	1
Somerset	1	1
Monmouthshire	1	1

Table Two. Counties from which *Idaea rusticata* has been recorded in RIS light-traps, with the number of sites and number of individuals caught.

Site	Site No.	County	OS Grid Ref.
Ewingswode	277	Huntingdonshire	TL 200 797
Hamstreet	472	East Kent	TR 004 334
Lydd	462	East Kent	TR 044 203
Rothamsted (Barnfield)	1	Hertfordshire	TL 132 135
Sheppey	370	East Kent	TQ 949 739
Warehorne	478	East Kent	TQ 988 346
Winchester	379	Hampshire	SU 517 339
Yarner Wood	266	Devon	SX 786 788

Table 3: details of RIS light-trap sites mentioned in the text. A further location is not on the Ordnance Survey grid reference system: Guernsey (Channel Islands) - States Horticultural Advisory Service, St. Martins.

Acknowledgements

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References

- Newman, E., 1869. *The Natural History of British Moths*. Allen, London.
 Skinner, B., 1998. *Colour Identification Guide to Moths of the British Isles*. Viking, Harmondsworth.
 South, R., 1939. *Moths of the British Isles*, Vol. Two. Warne, London.